

THE INSECT PEST SURVEY BULLETIN.

A monthly review of entomological conditions throughout the United States.

Volume 1.

May 1, 1921.

Number 1.

BUREAU OF ENTOMOLOGY
UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING.

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INTRODUCTORY STATEMENT.

The rapid advance in entomological activity during the past ten years has necessarily been accomplished by a readjustment of this branch of scientific agriculture. Comprehensive survey has become necessary i.e. the assembling of all data on distribution, season and regional fluctuation of insect abundance, weather data as related to insect outbreaks, phenological data and other miscellaneous information, studying the data and correlating its various factors and disseminating the results in an available form for the immediate use of alleconomic entomological workers.

The Bureau of Entomology of the United States Department of Agriculture, in cooperation with the State Entomologists, Entomologists of the Agricultural Experiment Stations, State Departments of Agriculture, Agricultural Colleges, and other entomological agencies has organized for this work an Insect Pest Survey.

The Survey hopes to issue a Monthly Bulletin on current insect conditions throughout the country. In addition to this main publication it will attempt to publish Special Reports of immediate interest on outbreaks of a more serious nature. These special reports will be sent out if possible the day following that upon which the information is received and will only be sent to the States immediately concerned in the outbreak reported. (A number of these special Reports have already been issued). The subject matter of the Special Reports will always be reviewed in the Monthly Bulletin for general information. Very serious outbreaks are to be reported by our Collaborators by wire and a Telegraphic Emergency Report will be issued when occasion demands.

Each year an annual digest of the important facts gathered during the past season will be published in the form of Insect Pest Summaries; a separate summary to cover the pests of each of the major group of crops. In the Summaries will be, when possible, maps of the distribution of outbreaks comparing these with previous recorded outbreaks, correlated weather and insect abundance graphs, tabulated statistics on losses occasioned by insects, seasonal abundance curves, etc. which will serve as a basis for approaching any economic problem with a much clearer perspective than is possible with this information scattered through the publications of the many entomological agencies or in the files of the entomological workers throughout the country.

OUTSTANDING ENTOMOLOGICAL FEATURES OF MARCH AND APRIL

1921./

The most serious situation reported during the past two months is the widespread and severe infestation by Chinch Bug in the Central Mississippi Valley Region, starting in northern Texas and extending in a northeasterly direction over Oklahoma, Kansas, and Missouri, touching Nebraska and extending across Illinois and Indiana into Michigan.

The Hessian Fly situation is reported as serious in Indiana, Ohio, and Missouri, about normal in Illinois and Nebraska and slight in Kansas/.

A serious Green Bug outbreak started early in the spring in Texas, Oklahoma, Kansas and Missouri, but parasites and adverse weather conditions reduced the infestation to such an extent that the most recent advices report the wheat out of further danger/.

A very extensive Jointworm outbreak is eminent in Missouri. If favorable conditions prevail enough Jointworm adults will emerge for the second brood to completely destroy the crop in certain sections/.

The worst infestation of alfalfa by Pea Aphid in the history of the State is reported from Oklahoma. The situation is also very serious in Kansas and is much worse than usual in Missouri and Illinois.

Clover Leaf Weevil is decidedly on the increase in destructiveness in Illinois, Indiana and Missouri and this pest in conjunction with the Lesser Clover Leaf Weevil and the Clover Root Curculio, sometimes accompanied with a fungus disease is becoming so serious in parts of Ohio that alsike and sweet clover are being substituted for red clover, it being impossible to grow the latter crop successfully.

A bad outbreak of the Fruit Tree Leaf Roller in the Bitter Root Valley of Montana; Pear Psylla reported as decidedly more serious than last year in the fruit growing sections of New York and a general increase of Grape Leaf Hopper in the Great Lakes grape growing region of Michigan are the outstanding features reported on Fruit Insect Pests.

A very severe outbreak of Seed Corn Maggot accompanied by a Fusarium rot in seed potatoes is prevalent along the south central Atlantic seaboard extending from North Carolina to the Eastern Shore of Maryland and practically covering the important early potato regions of these States.

The Mexican Bean Beetle situation which developed to such a serious extent in Alabama last year, now threatens Georgia and Tennessee. A very high percentage of the fall brood of beetles having successfully passed the winter.

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CEREAL AND FORAGE CROP INSECTS

WHEAT

CHINCH BUG (*Blissus leucopterus*)

- Michigan. R. H. Pettit, (March 15.). "Chinch bugs have gradually become common in the lower tier of counties next to Ohio and Indiana. The present open winter has shown them to be quite numerous on the under sides of mullen leaves and similar plants. We have been fortunate in the past in having been almost free from serious chinch bug attacks but expect to have to deal with them during the coming season."
- Illinois. Extension News Letters. Issued by the Extension Entomologists (March 30.). "Damage expected in fifty counties; severe in thirty. Wintered exceptionally well. A few bugs flew on March 19 and 20 in Southern part of State. Resistant strains of corn will be generally grown in infested area."
- W. P. Flint, (April 16). "The mild winter has been favorable to hibernating bugs. The insect is abundant over a greater area in the State than any time since 1887. Damages expected in fifty counties, severe in 30. A few bugs flew into the wheat on March 19 and 20. Moderate flights have occurred on several days since. Not more than half of the bugs are now in the wheat."
- Indiana. J. J. Davis, (April 15). "Chinch bug was not reported by correspondents to the Experiment Station in the year 1917, a number reported damage in 1918, more than twice as many in 1919, and more than four times as many in 1920. Forty-six counties in Indiana are infested, one-third of which might be considered as dangerously infested. The infestation begins at the extreme northeastern corner of the State and moves in a diagonal strip through the State several counties wide, the heaviest infested counties being in the northeastern and south-western tier of counties. The central part of the State is less heavily infested and the northwest and southeast corners are almost entirely free of bugs. There is every indication that the chinch bug will be a serious and important pest this year and more severe and widespread than for many years."
- Ohio. H. A. Gossard, (April 9), "Chinch bug is subsiding in numbers. There were not as many last year as in 1919 and we expect still fewer in 1920."
- Nebraska. Myron H. Swenk, (April 15.). "In 1920 there was some damage of a serious sort to wheat and corn in the Southern parts of Muckolls and Thayer counties. They wintered in rather larger numbers than usual in Southern Thayer County and probably west to Franklin County and in the

event of a dry spring some injury is looked for in this small area but not elsewhere.

Kansas.

Geo. A. Dean (March 29), "The mild dry winter has been very favorable for chinch bug hibernation, even those in poor winter quarters came through in good shape. From present indications the infestation will be more severe in the southeastern counties. Last Fall a large number of counties were well organized for burning campaigns, but rain and snow interfered with most of this work, however, in some counties considerable burning was done. We are expecting considerable injury over the entire eastern third of the State."

Extension News Letter, (March 30). "Bugs had left winter quarters prior to March 18, and were in the wheat. Expect heavy infestation. Wintered well."

J. W. McColloch, (April 8), "In Montgomery county chinch bug is on the increase. Migration of bugs from winter quarters have taken place and the fields are alive with them. Mating is taking place and eggs will soon be present."

Missouri.

A. F. Satterthwait (B. E. February 14). "St Louis County Farm Bureau reported that masses of living chinch bugs were being found on corn stalks in the fields and that the bugs were running over the ground to growing wheat. On investigation the matter he found chinch bugs present as reported, except not in masses. The bugs were migrating from corn fields where the corn had been shocked on the ground and had scattered to the neighboring wheat fields. Some bugs were found as much as half an inch below the surface of the soil on the wheat. Bugs were present also under the sheaths in at least one field, and were present in the pithy portions of the corn stalks remote from living vegetation."

A. F. Satterthwait, (March 28). "Chinch bugs are to be found in practically every wheat field in the river bottoms about Gumbo and Chesterfield, Mo."

L. Haseman, (April 7). "This pest passed the mild winter in great abundance in various types of shelter. In Scott County two weeks ago Mr. Burrill found chinch bugs abundant in dry sand without protection and fence rows. They have also been reported abundant in grass land. The pest is most abundant in the east central and southeastern counties of the State, though it is also threatening in the central, west central and south western parts of the State. While the pest wintered in increasing numbers the recent two days of freezing weather will undoubtedly have its effect on this and other pests. Winter burning of harboring places was handicapped by wet weather in the early part of the winter, but late in the winter very thorough burning work was carried out in the south east and west central parts of the State."

Oklahoma.

C.E. Sanborn (March 29). "This pest is likely to be more serious than for several years past. The weather condition during the winter was exceedingly favorable for hibernation. The bugs are beginning to infest the small grains at this time, although they have not much more than started to disseminate from their hibernating quarters."

HESSIAN FLY (Phytophaga destructor)

- Illinois. Extension News Letter (March 30). "Moderate numbers in central part of the State in all fields, seven days after advised fly-free-date of seeding. Wintered well. Emergence started in southern part of State March 19. All in pupal stage in central part of State March 22.
- W. P. Flint, (April 16). "Hessian fly is present in normal numbers over the entire State where conditions were favorable to the fall brood; but unfavorable to the spring brood. Parasites are scarce. All early sown wheat was heavily infested in the fall of 1920; the majority of flies survived the winter, but the weather has been unfavorable for the spring brood. Only a small number of eggs have been laid; some maggots now in wheat; numbers of eggs still on plants in Central part of the State."
- Indiana. J. J. Davis (April 4). "We began to find fly eggs in appreciable numbers on April 4 at Lafayette. There is every indication for a large spring brood and unless parasites become conspicuous there will be a big fall brood. We are advising against planting spring wheat and are not recommending the plowing under of infested wheat except in hopeless cases. Wheat generally wintered in fine condition and even where more or less heavily infested with the late wave of fly last Fall, Wheat on properly fertilized ground tillered well and has outgrown the injury."
- W. W. Larrimer (April 2). "Hessian fly is coming out in numbers at Lafayette and many eggs are being laid at this time. The wheat is in excellent growing condition however and has stood out considerably, so that in spite of the fly there seems to be a much better prospect for the wheat than at this time in 1920."
- Ohio. Extension News Letter (March 30). "Some fly in fields sown October 7. Wheat sown middle of October in Central part of State best. Few early sown fields, all such fields 50% to 90% infested. No pupation prior to March 17."
- H. A. Gossard (April 9). "From last years observations we are expecting considerable damage by Hessian Fly this season, most of the brood being derived from flies which issued about the middle of October over all parts of the State. Because of our well organized extension efforts in the early fall, all wheat seeding was delayed until the last few days of September or the first of October in northern Ohio and until the 10th of October of towards the middle in southern Ohio. It is therefore in northern Ohio that we expect some fly damage, but the state will suffer much less than during the season of 1920."
- Nebraska. Myron H. Swenk, (April 15). "Has been present in sub-normal numbers since the heavy outbreak of 1914-1915. In Fall of 1920 some increase in numbers in southern Nebraska, south of Nemaha, Lancaster and Hall counties."

Counties and West of Red Willow County. Field examinations this spring have shown sufficient numbers to possibly menace the winter wheat in the fall of 1931, if conditions between now and then remain highly favorable."

Kansas. Extension News Letter, (March 30). "Flaxseeds contained pupae almost ready to emerge March 18. Wheat rank. Weather dry and warm. Have general light infestation over eastern two-thirds of the State."

Missouri. _____ Lange, (April 6). "Found one female Hessian fly in flight. Found eggs few in number but in nearly every field in St Louis County."

L. Easeman (April 7). "The Hessian fly was most abundant last fall especially in the southeastern part of the State, however, it was also very abundant in north east part of the State as well as in the south west and west central parts of the State. Some of the early seeded wheat in these regions showed 75% to 90% infestation. In the southern counties the pest was largely in pupal stage by March 15 and a few adults emerged from pupae received and placed in the insectary on March 12. Just what effect the freeze of March 27 and March 28 had on the pupal or adult stages, where emergence may already have occurred in the field, I have not yet determined. Damage from the fall brood was in many localities and fields 100%. It is still too early to ascertain the damage from the spring brood. Where the pest destroyed the crop in the fall many farmers plowed it under. Cooperation in the matter of plowing last summer's stubble early and keeping down volunteer wheat and delaying seeding was unfortunately not as thorough as it should have been."

GREEN BUG (*Toxotera graminum*)

Nebraska. Myron H. Swank (April 15). "A few fields in Butler, Dodge, and Saunders Counties were severely damaged during late October in 1920. There seems to be no evidence of damage this spring."

Kansas. S. J. Hunter (March 17). "On the 22nd of February we found green bugs present in the vicinity of Arkansas City unaccompanied at that time by parasites. We have today come upon a serious infestation in the vicinity of Coffeyville. Parasites are in limited numbers. Mr. Hoffman is in charge of observations in Cowley and Dr. Lawson in Montgomery County."

Geo. A. Dean, (March 29). "Green bug is now infesting wheat fields in Cherokee, Labette, Chautauqua, Wilson, Montgomery and Cowley Counties."

The infestation in Cowley County is very slight, practically all of the infestations are in fields where there has been volunteer oats. Lysephlebus is present practically everywhere with the aphids, but with few exceptions they are not plentiful. For the last two or three days the temperature has been too low for parasites to breed or increase, while during the last few days there has been heavy rains over the greater part of the infested area."

P. B. Lawson (March 18 to 25). "Serious damage has already been done in Montgomery and Cherokee Counties in wheat fields where there was volunteer oats. Upland fields seem to be more seriously damaged. Lysephlebus testaceipes and Hippodamia convergens were present. The temperature has been warm up to March 21 then rainy and cold.

J. W. McColloch (April 8). The green bug outbreak is decreasing, the damage varying from less than 1%, in some fields to over 50%. A good rain with some hail was fatal to the green bug in many fields. Burning of the infested area and plowing under have proved successful in control of this pest. Aphidius testaceipes, Hippodamia convergens and Megilla fuscilabrus have destroyed as high as 60% to 75% of the aphids in some fields.

Oklahoma. C. E. Sanborn (March 16). "Green bug not nearly as severe as during 1907. It is now being brought under subjection by its parasites. C. E. Sanborn (March 29). "Occurred in Denton County Texas perhaps earlier than December although that is the first authentic report that I have. The infestation has disseminated northward until it is at present in the southern tier of counties in Eastern Kansas. The infestation is generally present throughout Oklahoma, westward as far as Jackson County on the southwest and Grant County on the northwest. The infestation is similar to that of 1906-1907, except that during the first four weeks of March, the weather was exceedingly favorable for the development of its parasites, Aphidius testaceipes. The parasite has disseminated as far northward as Kansas. An unusually large number of lady-birds especially Megilla maculata hibernated through the winter exceptionally well in this State. These have been a great advantage in the destruction of the green bugs.

Missouri. J. R. Horton (B. E. April 7). "Personally I inspected Tulsa and Noble Counties, and went over Tulsa County with the County Agent carefully, finding many fields infested with Toxoptera. The same seems to be in Noble, Logan and Oklahoma counties. The

infestation, however, has become rather light occurring only in the leaf curls and similar locations where the bugs were sheltered from the lady-beetle larvae, although they were previously numerous enough to entirely kill out the wheat in patches. Such patches range from two yards to an acre or more in size. Patches of the latter size were rare however, having been observed in places in Noble County. Both the larvae and the adults of Coccinellids were very numerous and apparently doing efficient work. Very few adult Hymenopterous parasites were seen."

(April 14). "The green bug in western Jasper County, Mo. is in all cases at a stand still, just as it is throughout the infested areas in Kansas and Oklahoma. Judging from the number of parasites we are getting from the material collected at Independence and Columbus, this condition of affairs is largely due to parasites."

Arkansas. W. J. Baerg (March 7). "First recorded appearance at Fayetteville."

Texas. E. E. Scholl (April 18). "Conditions have apparently been ideal for the development of green bug in Texas. The latter part of the summer of 1920 was unusually cool and moist. Average temperature of the winter for 1920-21 was abnormally high, there having been very little freezing weather. Complaints regarding green bug infestation began to come in from the grain growing sections of north Texas in January. Investigation showed that practically all of these infestations started in fields of volunteer oats, from which they spread to sowed grain. By February 10th the fields of sowed grain were yellow. The heaviest infestations seemed to be in Grayson, Denton and Collins Counties, although the infestation extended both east and west from there. Parasites were present in very limited numbers as early as February 10, but these have increased in number since. Many grain fields were destroyed and these were plowed under and put into other crops. A campaign will be put on this coming summer to keep down all volunteer grain."

C. H. Gable, (March 21) "Parasites are apparently dominating the situation in volunteer fields and the earliest infested fields of the regular crop. Fields give promise of a very fair yield. It is said that a migratory flight occurred on March 13 and 14, and on inspecting Bryant County, Oklahoma, the green bug was found to be fairly well distributed over the county."

OTHER APHIDS ATTACKING WHEAT

Forda olivacea

Nebraska. M. H. Swenk, (April 15). "Was continuing injuries in March 1921, which became evident in 1920. The general condition of wheat is such that little is to be feared from these aphids from now on."

Rhopalosiphum padi L. (Aphis avenae)

Kansas. P. B. Lawson (March 18 to 25). "Is very abundant on some wheat and rye in Cherokee, Montgomery, and Wilson Counties."

Macrosiphum granaria

Kansas. P. B. Lawson (March 18 to 25). "Is very abundant and apparently causing damage in some fields in Cherokee County, Montgomery and Wilson Counties."

Macrosiphum spp.

Missouri. Leonard Haseman (April 7). "Just before the Easter freeze, March 27 and 28 and also since, the plant lice on wheat and oats have attracted much attention especially in Newton, Jasper and Vernon Counties. In that part of the state a hail storm accompanied the Easter freeze which put a decided check on the plant lice. Two fields of wheat in Newton County were reported destroyed by the lice and a number in Jasper and Vernon Counties seriously damaged. The first reports seemed to indicate that the Southern grain louse, Toxoptera graminum was responsible for the injury. However, field collection of lice and samples received at the office show that one or perhaps two species of Macrosiphum were most abundant with Siphocoryne avenae as Hachose second. In only a few cases did Toxoptera graminum appear in the collections."

JOINT WORM (Harmolitha graminis)

Tennessee. Geo. G. Ainslie (B.E., April 14). "I have never seen so much Joint Worm as there is this year. Almost every field visited has an appreciable amount and in some places it is very severe. When we first found it the progeny of the minutum adults were about half grown in the little deformed tillers. They are now rapidly pupating and unless something happens to prevent their emergence and oviposition it seems certain that the next generation will be large enough to take practically every stem. The field seems generally infested too, not in patches but uniformly throughout. A great deal of wheat land was replanted to wheat last fall, and here of course no migration is necessary."

ARMY WORM (Cirphis tripuncta)

North Carolina. C. S. Brimley (March 21). "First adults of the season taken in baited moth trap. The season has been abnormally warm since March 1."

Extension News Letter (March 30) "Some damage expected."

Illinois. W. P. Flint (April 16). "Adult male, was taken March 26 and every warm night thereafter at Urbana. First gravid female taken April 4."

Kansas. Extension News Letter (March 30). "Much damage to wheat in southern part of the State. Poison bait is being effectively used against them."

Texas. E. E. Scholl (April 18). "On March 14, a number of noctuid larvae were sent in from Crosby County. In northwest Texas they were reported by Mr. R. E. Karper, Superintendent of Substation No. 8, located at Lubbock as doing considerable damage to young wheat in a few places in Crosby County. In one place practically all the wheat in a ten-acre field had been eaten to the ground. On April 5 Mr. Karper reported that the outbreak had not become serious as a general proposition but that some individual farmers suffered heavy damages."

FALL ARMY WORM, *Laphygma frugiperda*.

Kansas. S. J. Hunter (March 17). "The Fall Army Worm is doing considerable damage to wheat in Stafford County."

MISCELLANEOUS TRAP INSECTS

Chorizandra sp.

Kansas. G. A. Dean (March 14). "For nearly three weeks we have been receiving many reports from south central counties of Cut-worm injuring wheat and alfalfa, owing to mild weather they have appeared two or three weeks earlier this season than in past years. In some cases they were distributed over the greater parts of the fields, while in others they were more numerous along the edge of wheat fields adjoining pastures."

Cutworm undetermined.

Oklahoma. C. E. Sanborn (March 29). "Considerable damage has been done this spring even as early as January by a worm which I took to be a granulated cutworm, damage being similar to army worm damage. The main brood is now in the pupal stage."

Nematodes

Kansas. Geo. A. Dean (March 19). "Chase County Farm Agent has sent samples of alfalfa roots injured apparently by Nematodes. We are unable to find Nematodes present, but the roots are full of little long burrows. In 1919 Mr. McCulloch and Mr. Tanquary found large numbers of Nematodes present in Chase and Greenwood counties. Some fields have been almost completely killed."

False Wire Worm. (Eleodes opaca).

Nebraska. M. H. Swenk, (March 15). "The first report of injury received from Kimball County, A few fields having been badly killed out by this insect."

Tarnished Plant Bug. (Lygus pratensis)

Nebraska. M. H. Swenk (March 15). "Observed in very large numbers in wheat fields in Sherman County during March, apparently did no appreciable injury."

Leaf-hopper. (Agallia sanguinolenta)

Nebraska. M. H. Swenk (April 15). "Occurred in large numbers in wheat, both last fall and this spring, in a few cases apparently injuring fields appreciably."

Pegomya cerealis.

Nebraska. M. H. Swenk. (April 9). "Report of injury to wheat by this insect was brought to our notice."

ALFALFA AND CLOVER

PEA APHIS (Macrosiphum pisi L.)

Maryland. E. N. Corey, (April 14). "Much more abundant than usual at College Park but doing no appreciable damage. Potential damage to peas more serious."

Illinois. W. P. Flint, (March 23). "Much more abundant than average year in southern part of State. Few are diseased with Eurusa aphidis. Up to this date damage has been very slight."

Kansas. S. J. Hunter, (March 17). "Cowley and Montgomery Counties seriously infested. Specimens determined by Dr. C.P. Gillet and Professor J.J. Davis."

P. B. Lawson, (March 18 to 25). "Montgomery, Wilson and Cherokee counties, much more serious than average year. Young alfalfa frequently killed, old alfalfa seriously damaged. Since March 24, Eurusa aphidis has been observed attacking these aphids, a very serious infestation. The air some days filled with aphids."

Geo. A. Dean, (March 18). "During the last week we have received many reports of severe injury to alfalfa by the pea aphid. The seven or eight counties reporting the most serious injury in the

south central part of the State. This is the first time we have known this insect to seriously injure alfalfa although we have known it to injure clover in three of the eastern counties, but even here the injury was local. Some of the County Bureau men have reported fields of 20 to 40 acres badly infested and the Spring growth withering and drying up. The aphid has appeared much earlier this season than any previous spring. Over most of the States where the injury is reported the fields are very dry and the alfalfa is not making nearly the growth it would if there were moisture in the ground."

J. W. McCulloch, (April 18). "The first crop being completely held back in many fields in Montgomery County. The weather has been quite dry, with good rains a week ago. Hippodamia convergens, Metgilla fus-cilabrus, and a fungus disease working on this aphid, though the number of insects destroyed is low in most fields. In a few cases the fungus is holding the aphid in check."

Geo. A. Dean (April 13). "In spite of the fact that we have been having good rains for the past 7 or 10 days, alfalfa is making very little growth. In many places the fields are just as bare as they were in winter. Of course the alfalfa was badly frozen on the 23 and 29 of March. However, the fields would now be green if they were not so badly infested with the aphid. For more than two weeks the winged or what we usually call the migratory forms have been present, but have apparently remained right in the fields of alfalfa. In fact we know that they are reproducing here. Some of the winged forms have migrated to plants belonging to the mustard family and are reproducing in many of the fields. Coccinellids are becoming very abundant, and in some places the fungus disease is present."

Missouri. L. Haseman (April 7). "Pea aphid is doing some damage to red clover, and complaints are beginning to come in."

Oklahoma. C. E. Sanborn (March 29). "Never in the history of Oklahoma has the pea aphid been so destructive to alfalfa as is the case this spring. Some specimens have been prevalent during the spring of the year in times past but it appears that the viviparous forms developed rapidly during the winter and as a result were sufficiently numerous to seriously infest all alfalfa fields, especially the low lands where they seem to have passed the winter most advantageously on account of the cover afforded by the late growing alfalfa which was killed by the frost and not removed as hay. Many fields were so badly infested that they are being destroyed. The Empusa aphidis disease has only lately begun to effect them to any extent. Rains began about the 20th of this month, until that time it appeared to be too dry for the disease to show signs of effectiveness although a little was prevalent."

Arkansas. W. J. Baerg, (March 19). "First appearance at Fayetteville."

ALFALFA WEEVIL (*Phytonomus murinus*)

Nevada. Extension News Letter (March 30). "Two separate infestations, both very light, both over a 100 miles from the nearest infestation."

CLOVER LEAF WEEVIL (*Hypera cunctata*)

Maryland. E. N. Corey (April 20). "Received specimens from County Agent in Baltimore County, apparently more numerous than usual."

West Vir-L. M. Peairs (April 7). "Reported as doing considerable damage in ginia. Wheeling."

Illinois. W. P. Flint (April 16). "A general moderate infestation of alfalfa over the entire State, much more severe than usual. Clover much more seriously infested than usual, from 5 to 10% of the crop damaged. The first pupa was noticed at Carrollton on April 7, at which time they were fairly numerous in many fields."

Indiana. J. J. Davis (April 15). "Was first reported to us this spring on March 21 from Rockport which is in the extreme south end of the State. Since then we have received reports of abundance of this insect from points as far north as Marion, Ind. in the central part of the State. We are getting in reports every day. Two reports came in today where appreciable damage had already been done."

Missouri. A. F. Satterthwait (B.E. March 28). "In Missouri River Bottoms about Gumbo and Chesterfield, Missouri, a field was observed where extreme damage had been done by the larvae of this insect. The field was seeded in February or March 1920 along side of a clover field plowed down in October of the same year, the latter field being about two years old. In the infested field some plants were entirely defoliated. The leaf weevil larvae were well developed about 20% being more than half grown."

L. Haseman (April 7). "This pest is with us every year, but in a few isolated regions, serious damage to clover and alfalfa occurred this spring. Fields in Chariton County showed serious damage just before the recent freeze. Since the freeze no further complaints have been received."

MISCELLANEOUS CLOVER AND ALFALFA INSECTS

Clover root (*Eryobia praetiosa* Koch.)

Arizona. Don C. Mote (April 7). "This insect is more widely distributed than appeared at first and has probably been in the valley for several years. It has done considerable damage to alfalfa in two or three fields about Yuma, but it is difficult to estimate the damage. The leaves were injured for about a distance of a foot from the ground. Investigation would indicate that the damage will be greatly reduced as soon as hot weather

begins. Many of the mites will die while migrating from one field to another."

California. V. L. Wildermuth (April 9). "I was able to find what I think to be this mite upon bur clover and alfalfa on my ranch at Terpe, and on many isolated patches of bur clover about there."

V. L. Wildermuth (April 11). "Found this mite at Holtville, El Centro and Brawley. The same fields were infested in 1914, and I find in some cases to be infested this year. This is significant in seeming to indicate that we need not expect any widespread destruction of alfalfa crop in either the Imperial Valley or the Yuma Valley of Arizona."

Leaf-hopper (Typhlocyba comae)

Illinois. W. P. Fling (April 1). "Somewhat serious outbreak reported from Hillsboro. The field of alfalfa reported damaged was adjoining tract of wood land in which the septs had hibernated."

Clover root curculio (Sitona hispidula)

Ohio. H. A. Gossard (April 9). "This insect and the lesser clover leaf weevil (Phytonomus nigripustulus) and a fungous disease of red clover has become more injurious every year, making it almost impossible to grow the crop successfully. There is no evidence of an abatement of the injury. Alsike and sweet clover is being substituted in many cases for red clover."

Languria mozardi

Delaware. C. O. Houghton (April 4). "Took first adult this season."

Polia renigera

Iowa. F. A. Fenton (April 14). "Two reports of extensive injury by the variegated cut worm which have been received from two counties in Iowa in the south western quarter of the State. The insect was working on red clover and only about one-quarter grown."

SUGAR CORN CANE BORER (Diatraea saccharalis)

Louisiana. T. H. Jones (April 5). "Larvae, some in third instar were taken from corn at Baton Rouge to-day. The winter has been very mild and the spring early with less rain fall than usual."

T. E. Holloway (April 5). "Large numbers of third instar larvae in two of three plants. Species six weeks earlier than usual."

Twelve spotted cucumber beetle (Diatetica 12-punctata).

T. H. Jones (April 13). Plantings of corn are being made here at Baton Rouge approximately every week and the plants from each planting are examined approximately two weeks after the seed is planted. The first planting made on March 2 showed little root worm damage when observations were made on March 15, though subsequent damage was done to the plants. Larvae were very numerous in the planting of March 10, when examined March 23, as many as 20 being taken from one hill, and the first pupa was taken on this date. In the planting of March 16, examined on March 29, approximately as many larvae were found as were taken on March 23, from the planting of March 10, but many stalks had been killed before reaching the surface of the soil; a fact not so generally true in the earlier planting.

North Franklin Sherman (March 17). "First adult of the season observed at Raleigh on plum blossoms. The weather has been consistently abnormally warm since March 1. The females, several of which were dissected, were found to be distended with eggs."

WHITE GRUBS (Phyllophaga larvae)

West L. M. Peairs (April 5). "Larvae fairly abundant in plowed fields. Adults Virginia, appearing in considerable numbers."

Wisconsin. S. B. Fracker (April 15). "Scattered infestation from One County westward. Less abundant than in 1912 and 1915."

Ohio. H. A. Gossard (April 9). "Very abundant in spots in the northeastern part of the State."

New York. E. P. Felt. (April. 15). "Adult taken on sidewalk in Albany. This insect usually appears in May, frequently the latter part of the month."

Texas. J. D. Mitchell (April 5). "Traveled a good deal over the State in March. Heard many complaints of the damage to young corn by white grubs. Adults emerged in numbers in February a month or six weeks earlier than usual, due, I suppose to the mild winter."

C O T T O N I N S E C T S.

COTTON BOLL WEEVIL (Anthonomus grandis)

- NORTH CAROLINA. Extension News Letter (March 30) "has been found 65 miles from southern border of State."
- SOUTH CAROLINA. Extension News Letter (March 30) "Winter has been very mild and the boll weevil has been more or less active throughout the winter. Main efforts at extension work this season will be poisoning of this insect."
- TEXAS. E. E. Scholl (April 18). "Mr. H. J. Rienhard of the Division of Entomology of the Experiment Station reported catching a boll weevil in flight April 15 at College Station, Texas. The past winter has been very mild and it is likely that a much larger percentage than usual came through the winter season."

F R U I T I N S E C T S.

APPLE

CODLING MOTH (Cydia pomonella).

- VIRGINIA. L. A. Stearns. (April 9). Development of this insect is backward this season in the northern part of the State. Only 25% of the larvae have pupated so far.
- NORTH CAROLINA. Extension News Letter (March 30). Cluster bud spray being Applied March 17.
- ILLINOIS. S. C. Chandler. (April 14). First adult emerged on this date at Carbondale, Illinois. Urbana
J. P. Flint. (April 16). Mild winter at/has been very favorable to hibernating larvae; 20% of the overwintering larvae had pupated by April 15.
Extension News Letter (March 30). Cluster bud spray being applied in southern part of State.
- ARKANSAS. W. J. Baerg. (April 12). Moths began to emerge today.
- UTAH. V. M. Tanner. (April 1). St. George, Washington County. First appearance of adults.

GREEN APPLE APHID (Aphis pomi)

NEW YORK.

P. J. Parrott. (April 4). Abundant on apple buds at Geneva. 25% of aphids present are sorbi. Two or three sorbi on a bud in many cases.

P. D. Rupert. (April 8). Not abundant so far in Wayne County.

L. C. Tyler. (April 16). Scarce in Genesee County.

D. V. Rivenburg. (April 9). Not nearly so abundant in Columbia County as previous to the cold of March 28th.

H. W. Fitch. (April 11). Ravena, New York. On 100 buds there were all green aphids present. This is probably a mixture of pomi and avenae.

N. C. Hammond. (April 16.) Orange County. Not so abundant. (April 23). Aphids still seem to be scarce in orchards mentioned.

D. C. Vann. (April 16). Monroe County. Very few can be found.

L. H. Woodard. (April 16). Chataqua County. Not abundant.

WEST VIRGINIA. L. M. Peairs. (March 20). Green apple aphid abundant at Morgantown.

(March 23). A heavy freeze has apparently killed the green apple aphid at Morgantown.

(March 23). Green apple aphid reported abundant at Moundsville.

(April 1). Green apple aphid has been abundant in Berkeley County for several days.

A. A. Gold. (April 1). Green apple aphid 20% more abundant than average year near Raymond City in Putnam County.

ILLINOIS.

W. P. Flint. (April 16). Much less abundant than usual. Very few have been found in orchards in southern and central part of State.

UTAH.

H. J. Pack. (April 1). Observed hatching today at Logan.

EUROPEAN GRAIN APHID (Rhopalosiphum padi)

NEW YORK.

P. J. Parrott. (March 23). Newly hatched aphids appearing on apple buds at Geneva.

(April 4). Abundant on apple buds. 25% sorbi.

A. B. Buchholz. (March 25). Weather very warm. Observed on apples at Germantown, Columbia County.

D. B. Risenburg. (April 9). Columbia County. Not nearly so abundant as previous to the cold of March 28.

H. D. Leonard. (March 25). Ithaca. Observed ~~one~~ apple.

C. R. Crosby. (March 27). Bluff Point. Observed ~~one~~ apple.

F. H. Lacy. (March 27). (March 28). Dutchess County. Very numerous.

H. W. Fitch. (April 8). Ravena. Scarce.

(April 11). On 100 buds there were 111 green aphid.
This is probably a mixture of pomi and avenae.

D. D. Ward. (April 9). Onondaga County. Many present. Mature stem mothers noticed.

M. D. Leonard. (April 15). Catskill. Not uncommon in one unsprayed orchard. Scarce in orchards about Catskill which have been regularly sprayed.

G. E. Smith. (April 9). Orleans County. All that had hatched before March 27 were destroyed by rain and cold.

M. C. Hammond. (April 16). Orange County. Not so abundant as usual.

(April 23). Aphids still seem to be scarce in orchards.

P. D. Rupert. (April 8). Wayne County. Not abundant.

L. C. Tyler. (April 16). Genesee County. Scarce.

D. C. Vann. (April 16). Monroe County. Very few can be found.

L. H. Woodward. (April 16). Chataqua County. Not abundant.

ROSY APPLE APHID (Anuraphis roseus Baker).

NEW YORK.

P. J. Parrott. (April 4) Geneva. Abundant on apple buds. 25% are scirbi (roseus). 2 or 3 scirbi on a bud in many cases.

P. D. Rupert. (April 16). Wayne County. Several observed. As a rule, however, one has to hunt to find one of them in the majority of well sprayed orchards.

B. D. Rivenburg. (April 9). Columbia County. Not nearly so abundant as previous to the cold of March 28.

H. W. Fitch. (April 11). Ravena. On 100 buds 13 rosy aphids were present.

L. H. Woodward. (April 16). Chataqua County. No abundant.

D. C. Vann. (April 16). Monroe County. Very few can be found.

L. C. Tyler. (April 16). Genesee County. Scarce.

M. C. Hammond. (April 16). Orange County. Not as abundant as usual.

(April 23). Aphids still seem scarce in orchards observed.

D. D. Ward. (April 23). Onondaga County. Only a few noted. Held in check by rainy and cold weather.

MISCELLANEOUS APHIDS.

Aphis mali.

NEW YORK.

D. D. Ward. (April 23). Onondaga County. Only a few noted. Held in check by rainy and cold weather.

Erisoma lanigera.

UTAH.

V. W. Tanner. (March 15). Active since March 15th. Doing much damage at St. George, Washington County.

Aphididae.

MASSACHUSETTS. W. L. Baker. (April 4). Benson in Plymouth County. More abundant than usual. The season is somewhat advanced. Buds of Baldwins expanded 1/4 inch; earlier varieties 1/2 inch; unseasonably early.

CONNECTICUT.

W. E. Britton. (April 19). Milford. On March 28 aphids had hatched and nearly every bud cluster had one or more aphid. Now nearly all have disappeared. Lady beetles and weather probably responsible. The weather has been cold with heavy rain-fall.

OHIO.

H. A. Gassard. (April 3 and 4). There were fewer eggs laid last fall than for the past 3 or 4 seasons. The warm weather will

doubtless operate against the aphids. Syphid flies were also quite abundant.

FRUIT TREE LEAF ROLLER (Archips argyrospila)

- NEW YORK. L. F. Strickland. (April 19). Niagara County. First larva observed on this date.
D. D. Ward. (April 23). Onondaga County. Hatched on this date.
H. B. Leonard. (April 15). Greene County. Only one found.
(April 15). Columbia County. Only two caterpillars found.
J. D. Palmer. (April 9). Ulster County. Very scarce.
- MONTANA. Extension News Letter (April 30). Fruit tree leaf roller serious in Bitter Root Valley.

CIGAR CASE BEARER (Coleophora flaccidella Fernald)

- NEW YORK. L. C. Tyler. (April 9). Genesee County. Plentiful.
J. B. Palmer. (April 9). Ulster County. Very scarce.
P. D. Rupert. (April 16). Wayne County. Many present in some orchards.
M. D. Leonard. (April 15). Catskill. Not uncommon in one unsprayed orchard.
D. C. Vann. (April 16). Monroe County. Found in some orchards.

PISTOL CASE BEARER (Coleophora malivorella Riley)

- NEW YORK. D. D. Ward. (April 2). Onondaga County. Not so abundant as last year. Moving to the buds on April 1st.
J. B. Palmer. (April 9). Ulster County. Very scarce.
E. P. Felt. (April 9). Southern Rensselaer County. First observed on the above date.
P. D. Rupert. (April 16). Wayne County. Many present in some orchards.
D. D. Ward. (April 16). Onondaga County. Causing injury in a few orchards.
D. C. Vann. (April 16). Monroe County. Found in some orchards.

RIBBED COCCON MAKER (Bucculatrix pomifoliella)

- ARKANSAS. W. J. Baerg. (March 20). Began hatching at Fayetteville on this date.

BUD MOTH (Thetocera ocellana)

- NEW YORK. P. J. Parrott. (April 7). Observed eating apple buds at Geneva.
M. D. Leonard. (April 15). Not uncommon in one unsprayed orchard at Catskill.

APPLE RED BUG (Heterocordylus milinus)

NEW YORK.

P. J. Parrott. (April 11). Considerable injury is one orchard at Oaks Corners to the leaves of terminal growth by second instar nymphs. This is the earliest date we have ever observed the insect and pink spray: will probably not be observed until April 19th or 20th. Judging by blossoming of different fruits on the station grounds at Geneva the season is about 33 days ahead of last year.

D. D. Ward. (April 14). Onondaga County. First nymphs observed.

(April 19). Third stage nymphs found.

J. B. Palmer. (April 19). Hilton, Ulster County. Numerous in orchards along the river. Some nymphs in second stage.

(April 23). First nymphs found April 19th on several farms.

P. D. Rupert. (April 20). Wayne County. One first stage nymph found which was duly hatched.

(April 20). One second stage nymph found.

WEST VIRGINIA. A. L. Cold. (April 1). I find this insect frequently near Raymond City in Putnam County. It frequently does serious damage in apple orchards.

TARNISHED PLANT BUG (Lygus pratensis).

NEW YORK.

P. J. Parrott. (April 6). Punctured apple buds at Geneva.

M. D. Leonard. (April 16). Several observed on apple buds at Germantown.

P. D. Rupert. (April 16). Wayne County. Several observed on apple buds.

TEXT CATERPILLAR (Malacosoma americana).

DELAWARE.

C. I. Houghton. (April 19). Webs numerous on apple and cherry. Eggs were hatched during the third week in March at Newark.

NORTH CAROLINA. Franklin Sherman. (March 20). Abnormally warm since March 1st. First nest of the season observed at Raleigh today. Eggs must have hatched about March 15th.

ARKANSAS.

W. J. Baerg. (March 20). First made appearance at Fayetteville.

UTAH.

V. W. Tanner. (March 15). Very abundant this year at St. George. Washington, County.

MISCELLANEOUS APPLE INSECTS.

- FALL CANKER WORM (Alseodonta Bonetaria Harris)**
OHIO. H. A. Gassard. (April 9). This insect issues in the spring over northeastern Ohio and adults were observed appearing in numbers at Worchester during the last week in February. Last year unsprayed orchards about Worchester and at many points in northeastern Ohio were severely eaten. Patches of woodland consisting of elm and linden were nearly defoliated. We expect about the same amount of damage this year as last. The eggs have not begun to hatch.
- SPRING CANKER WORM (Paleacrita vernata Peck)**
WEST VIRGINIA L. M. Peairs. (April 2). Moths observed on wing at Morgantown.
- LEAFHOPPERS (Empoa rosae Lin. or unicolor Fitch).**
NEW YORK G. E. Smith. (April 25). Orleans County. Nymphs found hatching in abundance in a few orchards and scattering in most orchards.
- Erythroneura (Typhlocyba) obliqua Say**
OHIO H. A. Gassard. (April 9). Unusually abundant in the orchard of H. W. Schmitzons at Lorain. Very conspicuous flying out of the trees before the spraying gun.
(April 28). These insects are very numerous in some sections of the orchard, it being easy to find from one half dozen to a dozen on a single leaf. We previously encountered this species in great numbers in an apple orchard in Galia County, southwestern Ohio, about 1912 or 1913. It did considerable damage to the Galia orchard for two or three seasons, and the proprietor reports that considerable damage was done to the orchard at Lorain last year. This leaf-hopper has definite capacity for damage and must be regarded as an economic insect of considerable importance at times.
- SAN JOSE SCALE (Aspidiotus perniciosus Comstock)**
NEW YORK. F. H. Lacy. (April 7) Dutchess County. Present in nearly every orchard.
H. W. Fitch. (April 16). Pavena. More abundant than last year.
- ILLINOIS. W. P. Flint. (April 16). More abundant in the southern half of the State. Counted the scale from several different orchards which showed that over 50% of the half-grown scale survived the winter. In very severe winters about 5 or 10% usually survive.
- INDIANA. Extension News Letter. (March 30). Abundant in southern half of the State.
- MISSOURI. L. Haseman. (April 7). The San Jose scale is attracting more than usual interest due to the fact that orchards have proven profitable for the past several years in Missouri. Most of the best orchards and orchard communities where the pest is present

are being brought under control. However, in a few cases promising orchards have been neglected and in such orchards sprays have been applied this spring.

P E A R.

PEAR THRIPS (*Euthrips piri*)

NEW YORK.

A. D. Buchholz. (March 26.). Germantown, Columbia County. Weather very warm. Thrips swimming in full force on buds. Kieffer pear buds too far advanced for effective spraying.

D. W. Rivenburg. (March 30). Columbia County. Damage to buds not nearly so heavy as that of preceding years. Many thrips are present in the buds and others are entering.

(April 16). Eggs found on blossom pedicels.

(April 25). Eggs hatched and young at work.

J. B. Palmer. (April 9). Ulster County. Very abundant in many orchards.

(April 15). One to two thrips observed per bud on grapes in several sections.

(April 16). Abundant on pears and apples. Serious damage to Sutton apples, 60 to 70% of the buds being killed on several trees in two plantings.

A. L. Sheppard. (April 15). Oswego County. A few have been observed.

PEAR PSYLLA (*Psylla pyridola* Foerst.)

NEW YORK.

P. D. Rupert. (March 10) Wayne County. Adults observed.

(April 8). Ovipositing in considerable numbers in practically all orchards in the county.

(April 16). The majority of the eggs were deposited by April 13. There are few flies to be found on April 16.

D. W. Rivenburg. (March 30). Columbia County. Eggs in great abundance. Egg laying continued up to April 8 at least. No new laid eggs observed on April 8th.

(April 13). Eggs hatching in great numbers.

L. C. Tyler. (April 9). Genesee County. Eggs are much more abundant than last year.

(April 20). Nymphs have been hatching all the week. Many eggs found in tops of tall trees.

Hugh Glasgow. (April 20). Geneva. Eggs began hatching.

D. C. Vann. (April 16). Monroe County. Eggs have been deposited in great numbers. Very few flies can now be found. Eggs found hatching April 15th.

L. F. Strickland. (April 16). Niagara County. First egg found on March 23. First nymphs observed on April 11. Oviposition very heavy in all parts of the county and still incomplete.

D. D. Ward. (April 9). Onondaga County. Eggs found in numbers on pear trees throughout the county.

(April 23). Many eggs laid during the past 10 days and since the cluster-bud stage.

P. J. Parrot. (April 15). Ontario County. Extensive oviposition in the county. No eggs hatched yet and only a few hibernated adults were observed. Spraying for eggs with lime sulphur 1-8 practically completed by progressive growers.

G. E. Smith. (April 9). Orleans County. Flies and eggs dangerously plentiful in all orchards.

(April 11). Psylla eggs beginning to hatch. First nymph found today. Flies have about all disappeared.

(April 23). Nymphs found in second instar. Nymphs not plentiful as yet. Very few this season.

A. L. Sheppard. (April 16). Oswego County. Eggs fairly abundant.

H. W. Fitch. (April 8). Ravena. Flies and eggs very numerous.

(April 16). Eggs found hatching.

J. D. Palmer. (April 9). Ulster County. Flies abundant and eggs beginning to be laid.

(April 11). Abundant nymphs first observed April 11.

(April 23). Nymphs abundant and their numbers indicate severe infestation.

P E A C H

BLACK PEACH APHID (Amuraphis persicae-niger Smith).

- INDIANA. J. J. Davis. The black peach aphid has been usually abundant in orchards at Mitchell, Indiana.
- UTAH. V. W. Tanner. (April 1). Black peach aphid doing considerable damage in some trees at Saint George, Washington County.
- NORTH CAROLINA. Franklin Sherman. (March 19). Black peach aphid (Aphis prunicola). Correspondence of late March and early April indicates that this species is perhaps more prevalent than usual. The weather has been abnormally warm since March 1st. The lady bug Adalia Bipunctata was observed attacking this aphid.

PEACH BORER (Synanthedon eitisosa Say).

- ILLINOIS. W. P. Flint. (April 16). Mild winter has favored the hibernation of the larvae of this insect; is probably more abundant than the average. Para-dichlorobenzene has given very satisfactory results in controlling the borer where properly applied.

MISCELLANEOUS FRUIT INSECTS

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

- NORTH CAROLINA. Franklin Sherman. (March 19). First adult of the season observed today at Raleigh. The blossoms of this plum tree had fallen about four days before the beetle was taken. The season has been abnormally warm since March 1st.

GRAPE LEAF HOPPER (Erythroneura pomae Say)

- MICHIGAN. R. H. Pettit. (March 15). "Right now the vineyards down at Paw Paw and Lawton are swarming with grape leafhoppers. We have had an open winter with very little cold weather and almost no snow and the hoppers have come out from their hibernating quarters and are now showing themselves. I hope the vineyard owners will become convinced that the logical way to control the grape leafhoppers is to rake up and burn rubbish late in the season. They surely will be convinced now that the grape leafhoppers do hibernate, as has been preached to them ever since I have been in Michigan."

"The Office of Deciduous Fruit Insect Investigations, Bureau of Entomology, advises that there is evidence that the grape leafhopper is apparently approaching another period of years of unusual abundance in the Great Lakes grape growing territory.

- NEW YORK. RASPBERRY BYTURUS (Byturus unicolor Say)
J. B. Palmer. (April 22). Ulster County. The first beetle was found today. This pest is annually destructive in this section and extensive control measures should be put in operation at once.
(April 22). The beetles are coming out in considerable numbers.
- NEW YORK. CURRANT APHID (Myzus ribis L.)
P. J. Parrott. (March 21). Newly hatched nymphs common at Geneva.
- DELAWARE. IMPORTED CURRANT WORM (Pteronidea ribesi Scop.)
C. L. Houghton. (April 6). A few females ovipositing today. Males very numerous. The weather is warm and bright. Observation made at Newark.
- VIRGINIA. Dex Hunt, F.H.B. (April 17). A very mild early spring with late frost. Larvae observed in enormous numbers. Entirely stripping gooseberry bushes.
- FLORIDA. Anthonis nebulosa Riley
J. R. Watson. (April 15). This insect is much more numerous than in previous years and seems to be on the increase at Monticello. This cane-beetle has been reported as doing considerable damage all over the peach section.
- FLORIDA. Franklinia hispanica projecta
J. R. Watson. (April 15). These thrips caused considerable damage to citrus while in bloom. They were much more numerous this year than usual over the whole State.
- FLORIDA. COMMON WHITE FLX (Diuraphis citri)
J. Chaffin. (March 20). Adults of the first brood noticed on March 20 at Gainesville. This is about 20 or 30 days earlier than usual. No doubt due to the warm weather.
- FLORIDA. RUST MITE. (Eriothyes olivaceus)
J. R. Watson. (April 15). This insect seems to be more abundant than usual this year, but is less abundant this month than last. It appeared 15 or 20 days earlier than normally.

TRUCK CROP INSECTS

POTATO.

SEED CORN MAGGOT (Hylemyia cilicrura formerly Pegomyia fusciceps)NORTH
CAROLINA

Franklin Sherman (April 6) Very serious outbreak of Seed corn maggot in the eastern part of North Carolina, covering Pitt, Beaufort, Tyrell and Pamlico counties; the maggots attacking seed potatoes in the soil before they sprout. This type of damage is an entirely new thing in our experience. Damage was first reported late in March and the insects are still at work. Mr. W. Mabee, Extension Entomologist, made careful counts in infested fields and found that 85% of the seed had been destroyed, necessitating replanting or abandoning the crop. He estimated that in the infested region the crop will be reduced 50% by the depredations of this insect. The infested region lies in the low costal plain and has a generally sandy loam soil. The weather this spring has been abnormally warm especially since March 1.

VIRGINIA

W. J. Schoene (April 18) We have had a number of reports from the Truck Experiment Station, from County Agents, and from Dr. E. P. Fromme, the Plant Pathologist at the Experiment Station, regarding the prevalence of the Seed-corn maggot in Eastern Virginia.

Dr. Fromme has just spent a number of days in eastern Virginia in going over some of the potato fields. He reports that he is of the opinion that the Seed-corn maggot is not responsible for the primary injury; that the chief difficulty is that the potatoes are affected with the Fusarium rot which is the primary cause of the trouble. Dr. Fromme tells me that this fusarium disease of potatoes requires a very high temperature for development and it appears that the high temperatures were present at the planting time in the Eastern Shore this year. He further reports that he found some potatoes which were rotting and which were not infested with maggot.

Some years ago in making some collections of the closely related species Pegomyia brassicae I very frequently took the larvae of the seed corn maggot and I was unable to find these larvae in any but decaying tissue.

Mr. M. Shapovalov, of the Bureau of Plant Industry, U.S.D.A. in a report dated April 11-14 says; The outbreak on the Eastern Shore of Virginia is quite general. Some perfect fields are to be found in central and northern Northampton County, but 15 % of hills missing is very common, 25% to 30% is frequent, and 50% to 75% has been observed.

The destruction is apparently brought about by two agencies: the Seed corn maggot and Fusarium spp. In certain cases the animal and plant parasites act singly and independently, in others they work together, making exact determination of the cause of trouble impossible. It appears that insect injury is predominant on the mainland while fungus rot is the outstanding feature on the peninsula.

On examination of a considerable number of hills clear cases of maggot injury could be seen.

High temperatures with low rainfall at planting time, soil type and drainage, storage and handling of the seed, and method of fertilized application, also seemed to be secondary limiting factors to the extent of damage in individual cases in this region.

W.H.White (B.E. April 21) The failure of the potatoes to germinate in a normal manner in some of the fields in the vicinity of Norfolk, Virginia, was due, in the writer's opinion, to the attack of maggots in some instances and to a fungus disease in others. In cases where the potatoes germinated but made a very slow growth and produced unhealthy plants, it was due to the attack of the maggot, in many instances accompanied by rot, but in cases where the potatoes failed to germinate, fungus rot was always present.

It would be impossible to estimate the damage caused by either of these agencies, because a large percentage of the seed pieces after being attacked germinated and the plants developed, but with much less vigor than under normal conditions and it is not possible that these plants will produce a full crop.

During the warm weather of March the adult of the Seed-corn maggot was very active and the flies were attracted to the potato fields by the decaying organic matter in the form of organic fertilizers such as fish scrap, tankage and dried blood. The plowing under of kale was also an attraction for the flies, as maggots of this species were usually abundant in such fields. Where uncut potatoes were examined they did not show any indication of either fungus or maggot injury.

MARYLAND

E.N.Cory (April 23) Received specimens from Hurlock with the following communication; " Under separate cover I am sending you a few pieces of potatoes I planted several weeks ago and I find that they are full of little worms which I am sure you will notice. They were planted on land on which crimson clover was turned under and the seed is home grown. I also planted some northern seed which does not show any rot."

COLORADO POTATO BEETLE (Leptinotarsa decimlineata)

- OHIO H.A. Gossard (April 9) Winter has been very mild and the season is two or three weeks ahead of normal. Potato beetles were scarce last year over most of the State. We think they will not be conspicuous this season.
- NORTH CAROLINA C.S. Brimley (March 26) Abnormally warm since March 1. The first adult seen in flight today at Raleigh.
- LOUISIANA T.H. Jones (March 14) Winter unusually mild. Spring three or four weeks earlier than the last few years. Eggs were noticed in outdoor cages on March 7 and in the field on March 14. In 1919 eggs were first noted on March 28 in the field.

LEAF FOOTED PLANT BUG (Leptoclossus phyllopus)

- LOUISIANA T.H. Jones (March 30) Adults damaging potatoes at Hammond. They congregate, especially on the tips of the growing shoots and, through feeding on them, cause them to wilt and die.

GREEN STINK BUG (Nezara viridula)

- LOUISIANA T.H. Jones (March 19) This insect has been reported by County Agent in Point Coupee Parish as injuring the crop of potatoes. The adults congregate especially on the tips of growing shoots and through feeding on them cause them to wilt and die. A cluster of eggs were observed on above date. In 1917 eggs were first noted in the field on April 13 at Baton Rouge.

CABBAGE.

HARLEQUIN CABBAGE BUG (Murgantia histrionica)

- D. C. Office of Truck Insect Investigations, B.E. (April 1) Observations during the last week in March indicate that a very high percentage of Harlequin cabbage bugs have successfully passed the winter in the vicinity of Washington. This insect normally is confined to the region south of Norfolk, Va. but during favorable years it has extended northward in destructive numbers into New Jersey, Ohio, and has even been found as far north as New York and New England.

NORTH CAROLINA Franklin Sherman (March 13) First adults of the season observed today. The weather has been abnormally warm since March 1. They are quite abundant, gregarious and mating.

SOUTH DAKOTA H.C. Severin (April 8). Winter exceptionally mild and spring very warm. The Harlequin cabbage bug was abundant and destructive last year and is expected to be more serious this year.

ARKANSAS W.J. Baerg (March 24) First adults observed at Fayetteville.

CABBAGE APHID (Aphis brassicae)

NORTH CAROLINA Franklin Sherman (Late March & early April) Complaints indicate that the insect is quite abundant, but probably not more so than usual for this season.

CABBAGE WORM (Pontia rapae)

WEST VIRGINIA L.M. Peairs (March 25) First adult seen on the wing at Morgantown.

NORTH CAROLINA C.S. Brimley (March 15) First adult of the season seen on March 1, had become common by March 15.

MISCELLANEOUS CABBAGE INSECTS.

Cabbage maggot (Phorbia brassicae)

NEW YORK H.C. Hockett (April 16) Nassau county. Eggs first found April 12 and maggots April 14. First fly observed April 7.

Millipedes.

NEW YORK H.C. Hockett (April 16) Nassau Co. Numerous among the stumps of cabbage grown for seed.

Mole Cricket (Scapteriscus didactylus)

ALABAMA W.C. Vail (March 26) This pest is increasing in seriousness. It seems to be worse on heavy moist soils but is common on well drained uplands. Damage was serious in the fall of 1920. Is already active this March.

BEAN INSECTS

MEXICAN BEAN BEETLE (*Epilachma corrupta*)

Alabama W.E.Hinds and N.F.Howard (March 22) In Birmingham section adults were active after March 1 and wgs were found by March 21. The adults are emerging in considerable numbers from hibernating quarters. It is evident that at least 20 % of last years beetles have successfully passed the winter. In view of the fact that a 4 % successful hibernation of the Boll weevil represents a serious infestation, the probable second brood of the Bean beetle will be extensive and injurious. At the time of writing, early garden beans are coming through the soil at Birmingham and ample food will be afforded for the first brood of larvae, unless the hibernated beetles destroy the crop; if this becomes the condition a serious and widespread migration may be expected with the result that the infested area may reach well into Georgia and Tennessee, by the end of the season.

BEAN LEAF BEETLE (*Ceratoma trifurcata*)

North Carolina C.S.Brimley (March 21) First adult of the season seen on sassafras blossoms at Raleigh.

SWEET POTATOE INSECTS.

SWEET POTATO WEEVIL (*Cylas formicarius*)

Florida A.C.Brown (April 15) The infested area in Baker County reduced about 75 % through eradication work carried on by the Bureau of Entomology and the State Plant Board of Florida.

SYMPHYLID MYRIAPOD

Miss. K.L.Cockerham. Sweet potatoes were damaged more than ordinarily by these myriapods over the entire southern half of the State. This damage was often mistaken for weevil injury. Our attention was called to it on numerous occasions. No myriapods were ever found in the tubers only the damage where it had tunneled into them.

STRAWBERRY INSECTS.

STRAWBERRY WEEVIL (Anthonomus signatus)

NEW YORK J.B. Palmer (April 14) Ulster County, found one weevil.

D.V. Rivenburg (April 21) Beginning to do damage in Columbia County.

MISCELLANEOUS STRAWBERRY INSECTS.

Otiorhynchus rugifrons

CALIF. H.S. Smith (April 1) Single infestation in the State in Alameda County. About 20 % of the plants in the infested field have been destroyed. Now under quarantine.

Phyllophaga spp.

NEBRASKA M.H. Swenk (April 15) At this time there are numerous reports of injury by white grubs.

Red Spider (Tetranychus telarius L.)

LOUISIANA T.H. Jones (April 13) A good deal of injury in Tangipahoa Parish.

Paria canella

CALIF. H.S. Smith (March 15) Much more abundant than usual at Floren, Sacramento County.

Garden slug (Agriololimax agrestis)

NEBRASKA M.H. Swenk (April 15) Noted last year for the first time in the State. First report of injury this year on April 11.

MISCELLANEOUS TRUCK INSECTS.

Garden slug (Agriololimax agrestis)

OHIO H.A. Gossard (April 9) This animal has been a major pest for the past two or three summers, attacking potatoes and other truck crops.

Asparagus beetle (Crioceris asparagi)

DELAWARE C.O. Houghton (April 8) Ovipositing at Newark.

MARYLAND J.A. Hyslop (April 24) Adults mating and many eggs being laid in Montgomery County.

Pea aphid (Macrosiphum pisi Kalt.)

LOUISIANA T.H. Jones (April 13) Very mild winter and early spring, less rain fall than usual. Causing severe damage to vegetables this spring at Baton Rouge.

Green peach aphid (Myzus persicae Sulz.)

LOUISIANA T.H. Jones (April 13) Causing severe damage to vegetables this spring.

Striped cucumber beetle (Diabrotica vittata)

FLORIDA H.C. Artis (April 5) There was a serious outbreak of this insect in the Wauchula section in May 1920. Several acres of cucumbers were completely destroyed. The outbreak was checked by spraying with arsenate of lead.

Pseudococcus maritimus

FLORIDA J.A. Chaffin (March 20) This mealy bug is recorded as attacking avacado, tomato, and sweet potato on Dry Tortugas Island. It has not been found on the mainland of Florida. Was probably introduced to the island from the West Indies.

Fall army worm (Laphygma frugiperda)

FLORIDA G.F. Barden (April 4) Practically destroyed ten acres of tomatoes in one field, few present in all tomato fields in the vicinity of Boynton. 75 % of the plants were actually destroyed. This is the first time this pest has been noticed at this place.

Cotton aphid (Aphis gossypii)

FLORIDA A.H. Beyer (April 14) Causing considerable damage in some fields of cucumbers at Gainesville.

Onion thrips (Thrips tabaci)

FLORIDA J.L. Lazonby (April 14) damaged 20 % of the onion crop at Gainesville. More abundant than usual.

FOREST AND SHADE TREE INSECT

OYSTER SHELL SCALES (Lepidosaphes spp)

ILLINOIS. W. P. Flint (March 16) Attacking Dogwood, Ash, Lilac and Poplar. Number of trees die after two or three years infestation.

Lepidosaphes ulmi

Extension News Letter (March 30) Damage to shade trees serious.

INDIANA. J. J. Davis (April 15) Is increasing in abundance in this state especially on shade trees and ornamentals in the northern two-thirds of the State. In orchards where regular spray practices have been in use, it is not ordinarily a pest.

OHIO. Extension News Letter (March 30) Attacking shade trees, more abundant now than for several seasons.

UTAH. H. J. Pack (March 26) Appeared on this date in Cache County.

MISCELLANEOUS FOREST AND SHADE TREE INSECTS

BROWN-TAIL MOTH (Euproctis chrysorrhoea)

MASSACHUSETTS Edward R. Farrar (April 12) About the same number of nests taken off 1200 apple trees as last year at Lincoln.

GYPSY MOTH (Porthetria dispar)

MASSACHUSETTS Edward R. Farrar (April 12) Three times as numerous at Lincoln. Number judged by amount of creosote used.

NEW YORK Chermes pinicorticis

C. R. Crosby (April 22) Attacking white pine in Martinsburg.

Lepidopterous Leaf-miner

CONNECTICUT W. E. Britton (April 19) An unfamiliar lepidopterous leaf-miner which has ruined the appearance and lowered the vitality of many trees. We are studying the pest.

RED SPIDERS

OHIO H. A. Gossard (April 9) Mites or red spiders were quite abundant last summer and evergreens especially suffered from the attacks. Some trees were killed. Eggs were laid quite abundantly in the apple orchards last fall and are now hatching.

HICKORY BORER (Cyllene pictus)

NORTH CAROLINA L. M. Peairs (March 25) Adults were sent me where they were reported to be very abundant.

BAG WORM (Thyridopteryx ~~epistemiciformis~~)

MISSOURI L. Haseman (April 7) Attacking evergreens, orchards, and shade trees. This caterpillar has been especially troublesome for the past two years, especially in cities and in orchards. In Jasper County a special campaign has been started to clean up the pest in the orchards and in the cities of Joplin, Carthage and Webb City. In severe cases the foliage of fruit and shade trees and evergreens may be completely destroyed. Spraying with an arsenical is recommended for fruit, shade and evergreen trees.

Pseudonidia duplex Gill

Louisiana. T. H. Jones (April 9) The scale insect Pseudonidia duplex Gill. has recently attracted attention because of its occurrence in New Orleans. While the scale occurs on several ornamental plants the camphor trees appear most severely injured by it. It would seem that this insect has been recently and accidentally introduced into the City.

E. R. Barber (B. E. April 5) Upon my return (to New Orleans) in the beginning of last August, I noted this scale on a few trees around my house These trees were beginning to show signs of injury, a few of the lower branches were dying and a large number of the leaves were falling off. In the past eight months the trees for blocks around have been attacked by this pest.

Xylastodoris luteolus

FLORIDA G. F. Moynette (B. E. April 6) This species is at the present time very serious and destructive to the royal palm here. Apparently it is a species of Hemiptera, a very interesting form. I have never seen it before until now when people here commenced to complain about serious damage to their palms. The royal palms at this place are ten years of age and the superintendent tells me that he has never experienced this trouble before or noticed this pest. It may be something new which has crept in here.

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